skypatrol™

Reference Manual:
TT8500PB001MAN

Skypatrol Evolution
GSM/GPRS Mobile Location Unit
AT Command Set Reference

Release 1.05a

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1 Introduction

1.1 Document Scope

This documentation pertains to the AT Command Set to be used in conjunction with the Skypatrol Evolution GSM/GPRS MLU.

1.2 Platform Reference and Use

The Evolution MLU will be referred to using various terms, to include: MS (Mobile Station), TA (Terminal Adapter), DCE (Data Communication Equipment), or ME (Mobile Equipment).

The Evolution MLU can be controlled via the use of a DTE (Data Terminal Equipment) platform by issuing the AT commands via a serial interface.

1.3 Command Syntax

The attention or "AT" prefix is required prior to entering any command. All commands require a carriage return or <CR> following the entry of the desired command. All command responses are encapsulated by a carriage return and line feed or <CR><LF>. The ASCII display of these characters is suppressed with only the modem response being presented.

The following examples demonstrate the potential usage of AT commands presented:

Type	Example	Description
Command Format Query	AT$GXXX=?	When entered will return the command format and value ranges.
Command Read	AT$GXXX?	When entered will return the current value assigned to the command.
Command Write	AT$GXXX=<value>,<value>,…	When entered will set the command to specified value(s).
Command Execution	AT$GXXX	When entered will execute the specified command.

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2 AT Commands

2.1 EVENT

$EVENT	**User Defined Input/Output**
Command Function	This command allows the user to customize the modem's input and output capabilities. Any combination of input events can be monitored to trigger any combination of output events.
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	AT$EVENT=? $EVENT: (0-99),(0-3),(0-255),(-2147483647 - 2147483647),(-2147483647 - 2147483647)
Write Format Response	AT$EVENT=<**event group**>,<**event type**>,<**event category**>,<**parm1**>,<**parm2**> OK
Read Format Response	AT$EVENT? $EVENT: evgp evtyp evcat p1 p2 1A 0 9 2 4 1B 3 33 1 0 2A 0 9 5 5 2B 3 17 0 0 3A 0 9 0 0 3B 3 9 0 0 4A 0 9 1 1 4B 3 17 0 0
Execution Format Response	N/A

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2.1 $EVENT — User Defined Input/Output (continued)

Parameter Values

<event group> The event group. This parameter defines all of the events and the order they are executed. Events are grouped together to control execution sequence. If all input event group entries or an entry in the group are within range and at least 1 trigger input is valid, all event group outputs are activated. An event group should have at least 1 trigger input event, and at least 1 output event.

<event type> Event type

Type of event	Description	Value
transition trigger	Trigger when the requested event has transitioned into the event range. Valid when within the event range.	0
occurrence trigger	Trigger anytime the event occurs and is in the valid event range. Valid when within the event range.	1
input	Valid when within the event range.	2
output	Event is created when all inputs are valid & a trigger is present.	3

<event category> Event categories

Input State Event - Event based on GPIO pin activity when defined as an input. 0 = LOW 1 = HIGH

Value	Description	Valid range
0	GPIO1 – General Purpose Input/Output #1	0,1
1	GPIO2 – General Purpose Input/Output #2	0,1
2	GPIO3 – General Purpose Input/Output #3	0,1
3	GPIO4 – General Purpose Input/Output #4	0,1
4	GPIO5 – General Purpose Input/Output #5	0,1
5	GPIO6 – General Purpose Input/Output #6	0,1
6	GPIO7 – General Purpose Input/Output #7	0,1
7	GPIO8 – General Purpose Input/Output #8	0,1

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2.1 $EVENT — User Defined Input/Output (continued)

Modem Status Events - Events based on modem status.

Value	Description	Valid range
8	PWRUP – Modem power up	1
9	PLUS_CREG – Modem GSM registration. See AT+CREG command for range definitions.	0 to 8
10	PLUS_CGREG – Modem GPRS registration. See AT+CGREG command for range definitions.	0 to 8
11	NETWORK_IP – Receipt of IP address from network provider.	0,1 0 = No IP 1 = Available IP received from network

Input Timer Events - Event timer used to provide input signal based on timer value. See AT$EVTIME command to set pulse rate.

Value	Description	Valid range
12	EVTIM1 – Input event timer #1	1
13	EVTIM2 – Input event timer #2	1
14	EVTIM3 – Input event timer #3	1
15	EVTIM4 – Input event timer #4	1

MLU GPS Events - Evolution MLU specific input events.

Value	Description	Valid range
16	GPS Distance – Maximum distance	0 to 1000000 (meters)
17	Max Velocity – Maximum speed	0 to 250 (knots)

21	GEO FENCE 1 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
22	GEO FENCE 2 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
23	GEO FENCE 3 – Set a circular fence with	0, 1

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	radius r. See AT$GEOFNC command for more details	0 = Out of Fence 1 = Inside Fence
24	GEO FENCE 4 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
25	GEO FENCE 5 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
26	MLU Power Save Mode	0, 1 0 = Do nothing 1 = Power save condition occurs
27	GPS Status – Indicated if the GPS receiver has acquired the minimum number of satellites to get a valid GPS reading.	0, 1 0 = Do nothing 1 = GPS receiver has a valid fix

RTC Events - Real Time Clock input events.

28	RTC Alarm input	1

MLU GPS Events - Evolution MLU specific input events.

29	GPS Invalid Status – Invalid GPS data	0 to 1000000 (seconds)
30	GPS Stationary – Unit staying idle in one place	0 to 1000000 (seconds)
31	GEO FENCE 6 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
32	GEO FENCE 7 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
33	GEO FENCE 8 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
34	GEO FENCE 9 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
35	GEO FENCE 10 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
36	GEO FENCE 11 – Set a circular fence with radius r. See AT$GEOFNC	0, 1 0 = Out of Fence

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	command for more details	1 = Inside Fence
37	GEO FENCE 12 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
38	GEO FENCE 13 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
39	GEO FENCE 14 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
40	GEO FENCE 15 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
41	GEO FENCE 16 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
42	GEO FENCE 17 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
43	GEO FENCE 18 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
44	GEO FENCE 19 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
45	GEO FENCE 20 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
46	GEO FENCE 21 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
47	GEO FENCE 22 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
48	GEO FENCE 23 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
49	GEO FENCE 24 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence
50	GEO FENCE 25 – Set a circular fence with radius r. See AT$GEOFNC command for more details	0, 1 0 = Out of Fence 1 = Inside Fence

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2.1 $EVENT User Defined Input/Output (continued)

Output State Event - Events based on GPIO pin activity when defined as an output.

Value	Description
0	GPIO1 input – Changes GPIO line #1 to an input
1	GPIO2 input – Changes GPIO line #2 to an input
2	GPIO3 input – Changes GPIO line #3 to an input
3	GPIO4 input – Changes GPIO line #4 to an input
4	GPIO5 input – Changes GPIO line #5 to an input
5	GPIO6 input – Changes GPIO line #6 to an input
6	GPIO7 input – Changes GPIO line #7 to an input
7	GPIO8 input – Changes GPIO line #8 to an input
8	GPIO1 low – Generate a low signal on GPIO line #1
9	GPIO2 low – Generate a low signal on GPIO line #2
10	GPIO3 low – Generate a low signal on GPIO line #3
11	GPIO4 low – Generate a low signal on GPIO line #4
12	GPIO5 low – Generate a low signal on GPIO line #5
13	GPIO6 low – Generate a low signal on GPIO line #6
14	GPIO7 low – Generate a low signal on GPIO line #7
15	GPIO8 low – Generate a low signal on GPIO line #8
16	GPIO1 high – Generate a high signal on GPIO line #1
17	GPIO2 high – Generate a high signal on GPIO line #2
18	GPIO3 high – Generate a high signal on GPIO line #3
19	GPIO4 high – Generate a high signal on GPIO line #4
20	GPIO5 high – Generate a high signal on GPIO line #5
21	GPIO6 high – Generate a high signal on GPIO line #6
22	GPIO7 high – Generate a high signal on GPIO line #7
23	GPIO8 high – Generate a high signal on GPIO line #8

Output Transition Events - Events based on GPIO pin activity to transition an output line to the opposite state.

24	GPIO1 toggle – Transition line signal on GPIO line #1
25	GPIO2 toggle – Transition line signal on GPIO line #2
26	GPIO3 toggle – Transition line signal on GPIO line #3
27	GPIO4 toggle – Transition line signal on GPIO line #4
28	GPIO5 toggle – Transition line signal on GPIO line #5
29	GPIO6 toggle – Transition line signal on GPIO line #6
30	GPIO7 toggle – Transition line signal on GPIO line #7
31	GPIO8 toggle – Transition line signal on GPIO line #8

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2.1 $EVENT — User Defined Input/Output (continued)

Output Flash Events - Events based on GPIO pin activity to flash an output line.

32	GPIO1 flash – Flash line signal on GPIO line #1 based on parm1 and parm2 values
33	GPIO2 flash – Flash line signal on GPIO line #2 based on parm1 and parm2 values
34	GPIO3 flash – Flash line signal on GPIO line #3 based on parm1 and parm2 values
35	GPIO4 flash – Flash line signal on GPIO line #4 based on parm1 and parm2 values
36	GPIO5 flash – Flash line signal on GPIO line #5 based on parm1 and parm2 values
37	GPIO6 flash – Flash line signal on GPIO line #6 based on parm1 and parm2 values
38	GPIO7 flash – Flash line signal on GPIO line #7 based on parm1 and parm2 values
39	GPIO8 flash – Flash line signal on GPIO line #8 based on parm1 and parm2 values

Output Message Events - Events that generate a UDP message based on GPIO and/or GPS pin activity.

40	UDP Message – Generate and transmit one UDP message based on parm1 and parm2 values.
41	UDP Message w/ Acknowledge - Generate and transmit a UDP message based on parm1 and parm2 values. This message is controlled by the $ACKTM and $WAKEUP parameters. This message can also be acknowledged thus canceling the $ACKTM and $EVTIM parameters.
42	UDP Message – Generate and transmit a UDP message based on parm1 and parm2 values to all the IP addresses listed in $FRIEND list once.

Reset Timers - Resets the timer values back to set value for GPS Time and Distance feature

43	Reset Timers 1 and 2 ($EVTIM1 and $EVTIM2 – used in association with GPS Time and Distance feature)

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2.1 $EVENT — User Defined Input/Output (continued)

Output AT Command Event - Event that executes stored AT commands as defined in the AT$STOATEV command.

44	Execute stored AT command – Execute stored AT command as defined in AT$STOATEV. Parm1 identifies the index number of the command to be executed as defined in AT$STOATEV. Parm 2 is ignored.

Output Message Event - Events that generate a SMS message based on GPIO and/or GPS activity.

45	Sends data over SMS. SMS destination address has to be configured via AT$SMSDA command

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2.1 $EVENT — User Defined Input/Output (continued)

<parm1> parameter values

Event Type	Event Category	Result
Input, transition, occurrence	Input State Event	Defines the valid start range
Input, transition, occurrence	Modem Status Event	Defines the valid start range
Input, transition, occurrence	Input Timer Event	Defines the valid start range
Transition	MLU GPS Event	Defines the valid start range
Output, transition, occurrence	Output State Event	Parm1 is ignored
Output	Output Transition Event	Parm1 is ignored
Output	Output Flash Event	Bits 16-31 determine the low signal state while bits 0 – 15 determine the high signal state. A value of 0 for bits 16-31 indicates the GPIO will remain in low signal state for the same amount of time as the high signal state (for 50% duty cycle). The high or low states are measured in multiple of ¼ seconds. The toggle count is set by Parm2.
Output	Output Message Event	parm1 is a special user message identification. The 32-bit number entered can be used to dynamically generate intelligent messages. It will be the first 4 bytes of data following the API header in the output message. An example of using this field would be to designate the bytes as unique identifiers. Bytes 1 and 2 could identify the device, byte 3 could define the message format, and byte 4 could provide the event group that triggered the message.
Output	Reset timers	Timer number: 1 – 4

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Output	Output AT Command Event	Parm1 identifies the index number of the command to be executed as defined in AT$STOATEV.

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2.1 $EVENT **User Defined Input/Output (continued)**

<parm2> parameter values

Event Type	Event Category	Result
Input, transition, occurrence	Input State Event	Defines the valid end range
Input, transition, occurrence	Modem Status Event	Defines the valid end range
Input, transition, occurrence	Input Timer Event	Defines the valid end range
Transition	MLU GPS Event	Defines the valid start range
Output	Output State Event	Parm2 is ignored
Output	Output Transition Event	Parm2 is ignored
Output	Output Flash Event	The flashing GPIO event will cause the GPIO output state to toggle at time 0 to the state opposite of whatever the state was before starting the GPIO output flash event processing. This counts as toggle #1. An even number will force a final state which is the same as the initial state. An odd number of toggle counts will force the final state to be opposite of the initial GPIO output condition. 0 = toggle forever.
Output	Output Message Event	Parm2 defines the output UDP message format. **Bit 0**: 1 = send all numeric data in binary format 0 = ASCII format **Bit 1**: add PARM1 to generated UDP message (4 bytes binary, 11 bytes ASCII) **Bit 2**: add $MDMID value to generated UDP message (22 bytes ASCII) **Bit 3**: add GPIO data and direction to generated UDP message (2 bytes binary, 6 bytes ASCII)

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		Bit 4: add A/D 1 value to generated UDP message (2 bytes binary, 5 bytes ASCII) **Bit 5**: add A/D 2 value to generated UDP message (2 bytes binary, 5 bytes ASCII) **Bit 6**: store messages if out of GSM/GPRS coverage **Bit 7**: add Input Event number to generated UDP message (1 byte binary, 3 byte ASCII) **Bit 8**: add GGA NMEA message or binary Date (3 bytes binary, up to 80 bytes ASCII) **Bit 9**: add GLL NMEA message or binary Status (1 byte binary, up to 80 bytes ASCII) **Bit 10**: add GSA NMEA message or binary Latitude (3 bytes binary, up to 80 bytes ASCII) **Bit 11**: add GSV NMEA message or binary Longitude (4 bytes binary, up to 80 bytes ASCII) **Bit 12**: add RMC NMEA message or binary Speed (2 bytes binary, up to 80 bytes ASCII) **Bit 13**: add VTG NMEA message or binary Heading (2 bytes binary, up to 80 bytes ASCII) **Bit 14**: add binary Time (3 bytes binary, 0 bytes ASCII) **Bit 15**: add binary Altitude (3 bytes binary, 0 bytes ASCII) **Bit 16**: add binary Number Of Satellites (1 bytes binary, 0 bytes ASCII) **Bit 17**: This bit, when enabled, disables sending of OTA messages when the MLU is in Low Power Mode. **Bit 18**: This bit, when enabled, sends EVENT related data over SMS when GPRS is not available.

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		Bit 19-31 TBD
Output	Reset timers	0
Output	Output AT Command Event	Parm2 is ignored

Reference

Standard Scope Optional

Skypatrol Implementation Scope Full

Notes A maximum of 100 events (input and output) are supported as of firmware version 0.2.8. Only 50 events were supported before this new firmware.

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2.2 Geo-Fencing

$GEOFNC	**Geo fencing a circular area**
Command Function	This command allows a user to send a GPS message when the device moves in or out of a geographical area.
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	AT$GEOFNC=? $GEOFNC: (1 – 25),(0 - 100000),(-90 - +90),(-180 - +180) OK
Write Format Response	AT$GEOFNC=<***fenceNum***>,<***radius***>,<***latitude***>,<***longitude***> OK
Read Format Response	AT$GEOFNC? $GEOFNC: <***fenceNum***>,<***radius***>,<***latitude***>,<***longitude***> OK
Execution Format Response	N/A
Parameter Values	
<***fenceNum***>	Defines the fence number
<***radius***>	Defines radius of the circle from given Latitude and Longitude coordinates
<***latitude***>	Defines the latitude for the center point of a circle
<***longitude***>	Defines the longitude for the center point of a circle
Reference	N/A
Standard Scope	Optional

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2.2 $GEOFNC — Geo fencing a circular area (continued)

Skypatrol Implementation Scope Full

Notes

An AT$EVENT command has to be set to send a GPS message to the remote host when entering or exiting the fenced area. See the Evolution MLU Users Manual for example.

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2.3 GPS Local Subscription

$GPSLCL	**Configure sending of GPS message to the Serial Port**
Command Function	This command allows the user to configure sending of GPS data on the 9-pin serial port labeled “Serial” on the Evolution MLU device
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	AT$GPSLCL=? $GPSLCL: (0 – 4) OK
Write Format Response	AT$GPSLCL=<***option***> OK
Read Format Response	AT$GPSLCL? $GPSLCL: <***option***> OK
Execution Format Response	N/A

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2.3 $GPSLCL — Configure sending of GPS message to the Serial Port (continued)

Parameter Values

<***option***>	0 – Disable sending of GPS data to the local serial port when the device is in AT command mode (***Default***) 1 – Enable sending of GPS NMEA ASCII data to the local serial port when the device is in AT command mode 2 –Enable sending of GPS NMEA ASCII data to the local serial port. This option has to be sent by the user in DUN mode. Data sent as a result of this option will always contain a UDP/IP header. Data will be sent to the IP address and port number set by $UDPAPI command. This option has no effect on the operation of the modem when entered via the AT command mode. 3 – Enable sending of GPS TAIP ASCII data to the local serial port when the device is in AT command mode 4 –Enable sending of GPS TAIP ASCII data to the local serial port. This option has to be sent by the user in DUN mode. Data sent as a result of this option will always contain a UDP/IP header. Data will be sent to the IP address and port number set by $UDPAPI command. This option has no effect on the operation of the modem when entered via the AT command mode.
Reference	N/A
Standard Scope	Optional
Skypatrol Implementation Scope	Full
Notes	N/A

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2.4 GPS Odometer

$GPSODOM	**GPS Odometer History**
Command Function	This command allows the user to read the hourly Odometer history for four days – starting with the current day.
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	AT$GPSODOM=? $GPSODOM: (0-3) OK
Write Format Response	N/A
Read Format Response	AT$ GPSODOM=<**day** > $ GPSODOM: <**day** > <date (DDMMYY – **GMT**)> <Hour 0 (Hundreds of meters traveled between **Midnight** and **1 AM**> <Hour 1 (Hundreds of meters traveled between **010000** and **015959**> <Hour 2 (Hundreds of meters traveled between **020000** and **025959**> <Hour 3 (Hundreds of meters traveled between **030000** and **035959**> <Hour 4 (Hundreds of meters traveled between **040000** and **045959**> <Hour 5 (Hundreds of meters traveled between **050000** and **055959**> <Hour 6 (Hundreds of meters traveled between **060000** and **065959**> <Hour 7 (Hundreds of meters traveled between **070000** and **075959**> <Hour 8 (Hundreds of meters traveled between **080000** and **085959**> <Hour 9 (Hundreds of meters traveled between **090000** and **095959**> <Hour 10 (Hundreds of meters traveled between **100000** and **105959**>

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	<Hour 11 (Hundreds of meters traveled between **110000** and **115959**>
2.4 $GPSODOM	**GPS Odometer History (continued)**
	<Hour 12 (Hundreds of meters traveled between **120000** and **125959**> <Hour 13 (Hundreds of meters traveled between **130000** and **135959**> <Hour 14 (Hundreds of meters traveled between **140000** and **145959**> <Hour 15 (Hundreds of meters traveled between **150000** and **155959**> <Hour 16 (Hundreds of meters traveled between **160000** and **165959**> <Hour 17 (Hundreds of meters traveled between **170000** and **175959**> <Hour 18 (Hundreds of meters traveled between **180000** and **185959**> <Hour 19 (Hundreds of meters traveled between **190000** and **195959**> <Hour 20 (Hundreds of meters traveled between **200000** and **205959**> <Hour 21 (Hundreds of meters traveled between **210000** and **215959**> <Hour 22 (Hundreds of meters traveled between **220000** and **225959**> <Hour 23 (Hundreds of meters traveled between **230000** and **235959**>
Execution Format	N/A
Response	N/A
Parameter Values	
<day >	0 = today 1 = yesterday (1 day ago) 2 = 2 days ago 3 = 3 days ago
Reference	N/A
Standard Scope	Optional
Skypatrol Implementation Scope	Full

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2.4 $GPSODOM	GPS Odometer History (continued)
Notes	Distance traveled within an hour is only saved on top of every hour and during an Ignition off (if configured). Distance for the current hour is not saved in the event of a power cycle. Hour displayed is in Greenwich Mean Time (GMT) zone.

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2.5 GPS Read

$GPSRD	**Read current GPS ASCII data**
Command Function	This command allows a user to read current NMEA format GPS data.
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	AT$GPSRD=? $GPSRD: (0 – 3F) OK
Write Format Response	N/A
Read Format Response	AT$GPSRD=<***nmeaMsgs***> “ $GPG…….” OK
Execution Format Response	N/A
Parameter Values	
<***nmeaMsgs***>	This field is the bit-wise OR of the type of messages desired. The user has following message options to select from. Maximum value for <***nmeaMsgs***> in this case would be 3F

User Selectable Bits	Type of NMEA Message
0x01	GGA
0x02	GLL
0x04	GSA
0x08	GSV
0x10	RMC
0x20	VTG

Reference	N/A
Standard Scope	Optional
Skypatrol Implementation Scope	Full

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Notes N/A

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2.6 Message Log Clear

$MSGLOGCL	**Message Log Clear**
Command Function	The $MSGLOGCL command erases the log file.
Command Functional Group	
Command Format Query	N/A
Response	N/A
Write Format	N/A
Response	N/A
Read Format	N/A
Response	N/A
Execution Format	AT$MSGLOGCL
Response	OK
Parameter Values	None
Reference	
Standard Scope	
Skypatrol Implementation Scope	
Notes	

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2.7 Message Log Enable

$MSGLOGEN	**Message Log Enable**
Command Function	The $MSGLOGEN command has been created to enable or disable saving of data in memory
Command Functional Group	
Command Format Query Response	AT$MSGLOGEN=? $MSGLOGEN: (0-1) OK
Write Format Response	AT$MSLOGEN=<**setting**> OK
Read Format Response	AT$MSGLOGEN? $MSGLOGEN: **<setting>**
Execution Format Response	
Parameter Values	
<setting> =	0 – 1 (possible valid values) 0 = Disable message logging (default). Event data is sent to the remote server upon occurrence. 1 = Enable message logging. Event data has to be read via AT$MSGLOGEN command or when AT$MSGLOGEN=0 is sent.
Reference Standard Scope	
Skypatrol Implementation Scope	

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2.7 $MSGLOGEN

Message Log Enable (continued)

Notes

If AT$MSGLOGEN command was enabled and any unsent messages exist in memory, then the unsent data will be sent to the remote server when data logging is disabled.

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2.8 Message Log Read Data

$MSGLOGRD	**Message Log Read Data**
Command Function	The $MSGLOGRD command has been created to read data from memory.
Command Functional Group	
Command Format Query Response	AT$MSGLOGRD=? $MSGLOGRD: (0-2),(0-x),(0-y) OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT$MSGLOGRD? $MSGLOGRD: **<queue>,<number of messages>,<starting index>** OK
Parameter Values	
<queue> =	0 – 2 (possible valid values). 0 = event data that was configured to be sent to a remote server via GPRS only 1 = event data that was configured to be sent to a remote server via GPRS primarily but also use SMS as backup method if GPRS is not available 2 = event data that was configured to be sent to a remote server via SMS only

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2.8 $MSGLOGRD	**Message Log Read Data (continued)**
<number of messages> =	x x = total number of messages one desires to read from the memory. A user can choose to read 1 message in which case x = 1 or read all messages in which case x = 65535.
<starting index> =	y y = starting index number of messages that are stored in the memory. **NOTE:** y cannot be greater than maximum number of stored messages.
Reference **Standard Scope**	
Skypatrol Implementation Scope	
Notes	AT$MSGLOGRD? command returns 6 values. The first two values correspond to data stored for the GPRS queue. The next two values correspond to data stored for SMS AS BACKUP queue, and the last two values correspond to data stored for SMS queue • Each value is comma (,) delimited. • The first value of any queue represents “Total Number of Unread Messages”. This value can be used as the <number of messages> field while reading messages • The second value of any queue represents: “Total Number of Messages Stored for that Queue”. Subtract the “Total Number of Unread Messages” from the “Total

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Number of Messages Stored for that Queue" and use that as the <starting

2.8 $MSGLOGRD

Message Log Read Data (continued)

index> of where to read data from in the memory.

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2.9 Message Send

$MSGSND	**Message Send**
Command Function	The $MSGLOGEN command has been created to allow sending of data from one mode to another.
Command Functional Group	
Command Format Query Response	AT$MSGSND=? $MSGSND: (0-3),(“ASCII DATA”) OK
Write Format Response	N/A N/A
Read Format Response	N/A N/A
Execution Format Response	AT$MSGSND=**<destination>,<”data”>** OK
Parameter Values	
<destination> =	0 – 3 (possible Valid Values) 0 = <”data”> is sent out the serial port 1 = <”data”> is sent to all SMS addresses listed in AT$SMSDA command. 2 = <”data”> is sent via GPRS to first IP address, configured as server, in AT$FRIEND command and port number defined by AT$UDPAPI command 3 = <”data”> is sent via GPRS to IP address and Port number listed in the AT$PADDST command
<”data”> =	a maximum of 50 bytes ASCII characters

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2.9 $MSGSND	Message Send (continued)
Reference	
Standard Scope	
Skypatrol Implementation Scope	
Notes	AT$MSGSND command can be sent to the MLU via SMS, UDP-API, or serial port

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2.10 Network Monitor

$NETMON	**Monitor Network Availability**
Command Function	This command allows the modem to take aggressive network recovery action based upon the results of continuous network monitoring.
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	AT$NETMON=? $NETMON: (0,5-1440),(0-10),(0-255) OK
Write Format	AT$NETMON= <**net_unavail_min**>, <**reset_cnt**>,<**ping_check**>
Response	OK
Read Format Response	AT$NETMON? $NETMON: "<**net_unavail_min** >, <**reset_cnt**>,<**ping_check**>"
Execution Format Response	N/A N/A
Parameter Values	
<net_unavail_min >	Number of minutes the network must remain unavailable before current network connection is released, and a new network connection is attempted. A value of zero means the connection will never be released via AT$NETMON.
<reset_cnt >	Number of connections released before the modem erases all volatile network knowledge, before attempting to make a network connection. A value of zero indicates that a reset will never occur via AT$NETMON.
<ping_check>	Number of minutes between modem

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2.10 $NETMON	initiated ping checks. A value of zero **Monitor Network Availability (continued)** indicates that the modem will never initiate a ping check. If a ping check is requested and the modem has obtained a valid IP, and no network data has been received within "ping check" minutes, the modem will generate a ping to the 1st server friend. If no ping response is received, the modem will initiate pings to all server friends. If no ping response is returned from the friend servers, a new IP is obtained via a modem initiated de-activate/activate sequence.
Reference	N/A
Standard Scope	Optional
Skypatrol Implementation Scope	Full
Notes	This command is intended for extreme activation conditions, such as repeatedly moving in and out of coverage areas. It is not needed in normal conditions.

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2.11 Odometer

$ODOMETER	**MLU Trip Odometer**
Command Function	The $ODOMETER command records how far the vehicle has traveled in one trip. The user can reset the odometer at the beginning of a new trip.
Command Functional Group	
Command Format Query Response	AT$ODOMETER=? $ODOMETER: (0-4000000000)
Write Format	AT$ODOMETER=1234 (where 1234 is distance in meters)
Response	OK
Read Format Response	AT$ODOMETER? $ODOMETER xxxx (xxxx=distance traveled in meters)
Execution Format Response	
Parameter Values	
Reference Standard Scope	
Skypatrol Implementation Scope	

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2.11 $ODOMETER

Odometer (continued)

Notes

The user shall be able to set a seed value for the Virtual Odometer (including a value of 0 but not higher than the maximum value of 4000000000)

The AT&F command shall not reset the seed value to 0.

The Virtual Odometer reading would be a 4-byte value starting from 0 to 4000000000 (maximum of approximately 2500000 miles before it rolls over to 0)

The unit for Virtual Odometer shall be in METERS.

The Virtual Odometer history shall be updated every second

The Virtual Odometer history shall be saved once a minute in modem's memory. This value shall be retained through an internal or external reset and can be read upon the next power up or during run time mode. The delta distance traveled between the minute marks could be lost due to an unexpected external or non-modem originated reset. However, the total distance traveled till the prior minute would still be preserved.

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2.12 Power Save

$PWRSAV	**Enable power save mode**
Command Function	This command allows a user to put the device in low power mode when DTR or Ignition line drops. The Ignition line has to be connected per the user manual for this feature to work properly. A user has the capability of getting a notification when the device entering low power mode or returns to normal operating mode.
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	AT$PWRSAV=? $PWRSAV: (0 – 1),(0 – 1),(0 – 65535),(0 – 1) OK
Write Format Response	AT$PWRSAV=<***dtr***>,<***ign***>,<***timeout***>, <***reg***> OK
Read Format Response	AT$PWRSAV? $PWRSAV: <***dtr***>,<***ign***>,<***timeout***>, <***reg***> OK
Execution Format Response	N/A
Parameter Values	
<***dtr***>	0 – disable the DTR feature 1 – enter low power mode after DTR signal went low and timeout has expired
<***ign***>	0 – disable the Ignition feature 1 – enter low power mode after Ignition signal went low and timeout has expired
<***timeout***>	0 – 65535 seconds. Timeout value after which the unit will enter low power

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2.11 $PWRSAV	Enable power save mode (continued)
	mode. Unit will work in normal mode until the timeout has expired.
<***reg***>	0 – remain registered with GSM/GPRS network during low power mode 1 – reset modem when entering normal power mode
Reference	N/A
Standard Scope	Optional
Skypatrol Implementation Scope	Full
Notes	An AT$EVENT command has to be set to send a GPS message to the remote host when entering or exiting power save mode. If ***<dtr>*** AND ***<ign>*** parameters are set to 1, then both DTR and Ignition must be low for ***<timeout>*** seconds before the unit will enter low power mode.

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2.13 Remote TAIP

$GPSRTP	**Enable remote TAIP messaging**
Command Function	This command enables the user to select the OTA transmission method of TAIP data
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	AT$GPSRTP=? $GPSRTP: (0 – 3) OK
Write Format Response	AT$GPSRTP=<***remoteTAIP***> OK
Read Format Response	AT$GPSRTP? $GPSRTP: <***remoreTAIP***> OK
Execution Format Response	N/A
Parameter Values	
<***remoteTAIP***>	0 – disable sending of TAIP data OTA 1 – Send TAIP data OTA via UDP message w/Acknowledge 2 – Send TAIP data OTA via UDP message to all the IP address listed in $FRIEND command 3 – Send TAIP data OTA via UDP to the first IP address in $FRIEND list only
Reference	N/A
Standard Scope	Optional
Skypatrol Implementation Scope	Full
Notes	N/A

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2.14 TAIP

$TAIP	**Enable the user to send TAIP data to the GPS receiver**
Command Function	This command enables the user to send TAIP data string to the GPS receiver itself
Command Functional Group	Skypatrol Evolution Specific
Command Format Query Response	N/A
Write Format Response	AT$TAIP=“>TAIP_command<” OK
Read Format Response	N/A
Execution Format Response	N/A
Parameter Values	
>TAIP_Command<	see the TAIP reference manual for a list of supported TAIP commands.
Reference	N/A
Standard Scope	Optional
Skypatrol Implementation Scope	Full
Notes	N/A

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Appendix A – Default AT Values

$GPSLCL **Configure sending of local GPS message**
Default Value: 0
Default Value Meaning: feature disabled

$GEOFNC **Geo fencing a circle area**
Default Value: 1,0,0,0
2,0,0,0
3,0,0,0
4,0,0,0
5,0,0,0
6,0,0,0
7,0,0,0
8,0,0,0
9,0,0,0
10,0,0,0
11,0,0,0
12,0,0,0
13,0,0,0
14,0,0,0
15,0,0,0
16,0,0,0
17,0,0,0
18,0,0,0
19,0,0,0
20,0,0,0
21,0,0,0
22,0,0,0
23,0,0,0
24,0,0,0
25,0,0,0

Default Value Meaning: feature disabled

$GPSRD **Read current GPS data**
Default Value: none
Default Value Meaning: n/a

$PWRSAV **Enable power save mode**
Default Value: 0,0,0
Default Value Meaning: feature disabled

$GPSRTP **Enable remote TAIP messaging**

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Default Value:	0
Default Value Meaning:	feature disabled

$TAIP	**Enable the user to send TAIP data to the GPS receiver**
Default Value:	none
Default Value Meaning:	n/a

$EVENT	**User Defined Input/Output**
Default Value:	Events 1 – 6 are configured. Event group 1 and 2 are associated with User LED 2 and GPS fix. Event group 3 – 6 are associated with User LED 1 and registration status
Default Value Meaning:	User LED 1 indicates registration status. User LED 2 indicates GPS fix status

$NETMON	**Network Monitor**
Default Value:	0,0
Default Value Meaning:	feature disabled

$GPSODOM	**GPS Odometer**
Default Value:	0
Default Value Meaning:	no distance traveled.

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End of Document

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